

PATENTREMARKS

Claims 1-27 are currently pending in which claims 1-2 and 4-8 are allowed. In the Office Action, claim 3 was objected to because of an informality, but was otherwise considered allowable, claims 9, 17, 19, 20 and 24-27 were rejected under 35 U.S.C. §102(b) as being anticipated by US Pat. No. 6,037,811 to Ozguc (hereinafter "Ozguc"), and claims 10 and 11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ozguc in view of US Pat. No. 6,731,151 to Doutreloigne (hereinafter "Doutreloigne").

Claims 12-16, 18, and 21-23 were objected to as being dependent upon a rejected base claim but were otherwise considered allowable.

Claim 3 was objected to since the recitation "said first and second current amplifiers" lacked antecedent basis. The Examiner is correct in that Applicant intended to recite "first and second current *mirror* amplifiers," and claim 3 is amended accordingly. Applicant respectfully submits that claim 3 is now proper and requests withdrawal of this objection.

Applicant respectfully traverses the §102(b) rejection of claims 9, 17, 19, 20 and 24-27 as being anticipated by Ozguc.

Ozguc does not show a multi-level current pulse generator that provides a multi-level current pulse to gates of P-channel and N-channel devices sufficient to switch the devices *while minimizing average power dissipation* as recited in claim 9. Although Ozguc does show adjustable current sources 222 and 252 generating currents ICsig and IDsig, respectively, these current levels are directly determined by the CONTROL signal (per cycle determined by SIGNAL) once the sizes of the transistors comprising the

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current sources are determined (which are not adjustable once the circuit is determined by definition). Thus, the CONTROL signal itself must have a multi-level pulse format to cause the current sources 222 and 252 to generate multi-level current pulses. Yet Ozguc is silent concerning the specific form of the CONTROL signal. Ozguc does describe the function of the CONTROL signal, which is used to adjust the rise and fall times of the OUT signal at the output (see, e.g., Ozguc, col. 3, lines 10-20) by controlling charge and discharge currents through the output charging and discharging transistors MP1 and MN1, respectively. Consistent with the purpose of a current-controlled output buffer as disclosed in Ozguc, the transistors MP1 and MN1 are controlled to properly adjust the OUT signal as governed by the CONTROL signal. The purpose of Ozguc's current-controlled output buffer is not to switch the output transistors while minimizing average power dissipation, but instead to control the transistors to whatever activation levels are necessary to achieve the desired output.

Claim 9 is amended, solely for purposes of clarity, to specify that the multi-level current pulse provided by the multi-level current pulse generator is predetermined. Thus, the multi-level current pulse is predetermined and sufficient to switch the devices while minimizing average power dissipation. In contrast, the adjustable current sources 222 and 252 in Ozguc do not provide a predetermined multi-level current pulse but are instead controlled by the CONTROL signal to control the rise and fall times of the OUT signal as described in Ozguc.

Applicant respectfully submits that claim 9 is allowable over Ozguc. Claims 10-18 are allowable as depending upon an allowable base claim. Applicant requests withdrawal of this rejection.

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Further with respect to claim 17, Ozguc does not show a multi-level current pulse generator which provides a first multi-level current pulse to turn off an N-channel device and which provides a second multi-level current pulse to turn off a P-channel device. Contrary to that stated in the Office Action, neither of the pulses I1 or I2 are used to turn off the N or P channel transistors. As shown in FIG. 1 of Ozguc, separate switches 128 and 158 controlled by a separate SIGNAL are used to turn off the transistors MP1 and MP2. And in FIG. 2 of Ozguc, PMOS transistor 205b, controlled by SIGNAL, is used to turn off the adjustable current source 252 (Ozguc, col. 3, lines 2-4), and in a similar manner, PMOS transistor 209b, also controlled by SIGNAL, is used to turn off the adjustable current source 222.

In a similar manner, Ozguc does not show or describe a method of driving a high voltage switching device using a gate driver implemented using a low voltage process including generating at least one multi-level current pulse sufficient to modulate the gates of a P-channel device and an N-channel device with reduced average power dissipation as recited in claim 19.

Claim 19 is amended, solely for purposes of clarity, to recite a method including generating at least one predetermined multi-level current pulse sufficient to modulate the gates of a P-channel device and an N-channel device with reduced average power dissipation. Thus, the multi-level current pulse is predetermined and sufficient to switch the devices while minimizing average power dissipation. In contrast, the adjustable current sources 222 and 252 in Ozguc do not provide a predetermined multi-level current pulse but are instead controlled by the CONTROL signal to control the rise and fall times of the OUT signal.

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Applicant respectfully submits that claim 19 is allowable over Ozguc. Claims 20-27 are allowable as depending upon an allowable base claim. Applicant requests withdrawal of this rejection.

Further with respect to claims 25 and 26, Ozguc does not show a method including applying a first multi-level current pulse to the gate of an N-channel device to turn the N-channel device off or applying a second multi-level current pulse to the gate of the P-channel to turn it off. As noted above, neither of the pulses I1 or I2 are used to turn off the N or P channel transistors, but instead separate switches are employed for this purpose.

Applicant respectfully traverses the §103(a) rejection of claims 10 and 11 as being unpatentable over Ozguc in view of Doutrelaigne. As noted above, claim 9 is allowable over Ozguc and claims 10 and 11 are allowable as depending upon an allowable base claim. Doutrelaigne does not overcome the deficiencies of Ozguc as noted above, so that claims 10 and 11 are allowable over Ozguc in view of Doutrelaigne. Applicant requests withdrawal of this rejection.

None of the amendments made herein were related to the statutory requirements of patentability, but instead were made for purposes of clarity and to remove extraneous and/or unnecessary language. Also, none of the amendments were made for the purpose of narrowing the scope of any claim.

PATENTCONCLUSION

Applicant respectfully submits that for the reasons recited above and for various other reasons, the claims are allowable and the objections and rejections should be withdrawn. Reconsideration of the rejections and objections are respectfully requested. Should this response be considered inadequate or non-responsive for any reason, or should the Examiner have any questions, comments or suggestions that would expedite the prosecution of the present case to allowance, Applicants' undersigned representative earnestly requests a telephone conference.

Respectfully submitted,

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